

A method and apparatus for producing DRI, prereduced materials, or the like, utilized in the steelmaking industry, where hydrogen contained in the gas stream purged from the reduction reactor is separated (preferably by means of a PSA system) and recycled to said reduction reactor. The productivity of the reduction plant is increased by using the separated hydrogen as a chemical reductant in the reactor, instead of using it as fuel. This is particularly useful in upgrading existing DRI production plants.

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